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PRICE DETERMINATION PROCESSES: Issues and Evaluation

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PREFACE

This publication is based on material presented at a series of seminars for a select group of researchers and administrators in the U. S. Department of Agriculture in late 1973 and early 1974. The seminars were jointly sponsored by Farmer Cooperative Service and Economic Research Service.

CONTENTS

	Page
Highlights	1
Price discovery processes and mechanisms for price determination	3
Performance measures	5
Types of arrangements	6
Policy variables	6
Transfer pricing as an issue in agriculture and as a problem for cooperatives	7
Situation 1	9
Situation 2	10
Situation 3	11
Situation 4	11
Implications of patronage refunds or profit distribution	13
An imperfect competitive commodity market	13
Multiple commodity situation	13
Dynamic situation	14
Reported market prices as a transfer price base	14
Examples of transfer price rules used	15
Market value as reported by the state crop reporting service	15
Other kinds of transfer price rules	17
Evaluating price determination processes in agriculture	19
Situation by commodities	20
Performance considerations	21
Alternative price determination processes	22
Summary and recommendations	26

HIGHLIGHTS

The first seminar paper, "Price Discovery Processes and Mechanisms for Price Determination," focuses on ways buyers and sellers arrive at specific prices. An economically meaningful relationship exists between the trading system and its performance, or how well it works. The system of trading, in a broad sense, is the "transaction system"; it includes arrangements, institutions, and rules and regulations.

In considering measures of performance in our free-market capitalistic system, price is expected to carry the information necessary to cause appropriate adjustments in resource use and to allocate scarce resources and commodities so as to maximize consumer satisfaction (utility). The basic performance measure could, then, be in terms of how well the pricing system does the job of allocation of resources and products. However, there are other important considerations besides allocation, including those of public welfare, competition, costs, and buyers' and sellers' satisfaction. Such considerations are discussed, and they should be taken into account in evaluating the performance of transaction systems.

This publication considers various kinds of arrangements and various mechanisms that exist in the trading between buyers and sellers, including organized exchanges, futures markets, decentralized trading, formula pricing, administered pricing, committee pricing, and group bargaining.

Decisions of Government and those of industry trade organizations constitute "policy variables." A causal relationship exists between policy variables, the variability of trading arrangements, and the performance of the transaction system.

"Transfer Pricing as an Issue in Agriculture and as a Problem for Cooperatives," focuses on the prices used in coordinated agricultural enterprises in the transfer of commodities. In the context of such enterprises, in which the activities of farmers and cooperatives or corporations are coordinated, the price at which a product or service is bought or sold is termed the *transfer price*. The coordinated activities may vary from complete integration to various contractual relationships. The question of what the transfer price should be always poses a problem.

Specific relationships of farmers and marketing cooperatives with respect to transfer prices are discussed. However, generalizations might apply to coordinated activities of farmers and any cooperative or in any joint-venture enterprise.

Transfer price is presumed to have an impact on the management decisions of the cooperative and the behavior of the farmer members. It distributes revenues and has an impact on profit, flow of income, and distribution of products. It is not arrived at through such a situation as buyer and seller dealing face to face in a market. Rather, it is arrived at through application of a "rule," or previously established basis, often a formal agreement. Thus, the rule assumes critical importance, possibly along with other transaction rules. The objective in making

the rule is to get a transfer price that will give the proper "signals" to farmers and the cooperative so their decisions will produce maximum joint profit.

Four different basic situations involving buying prices and selling prices are presented, followed with a description of each situation with a tentative hypothesis as to the best rule governing the transfer price. The hypotheses are considered in relation to several special situations, including changing production and marketing conditions and the use of reported market prices in arriving at the transfer price. If a commodity can be sold or bought in a competitive market, the hypotheses indicate that:

- The optimal price (net marginal revenue equals marginal cost) should be used as the transfer price, unless it is above the price at which the cooperative could buy additional supplies on the open market.

- If the optimal price is above the price at which the cooperative could buy additional supplies on the open market, the open-market buying price should be used as the transfer price.

- If the optimal price falls below the price at which the producers could sell on the open market, the open-market selling price should be used as the transfer price.

"Evaluating Price Determination Processes in Agriculture" returns to previously discussed concepts, alternative arrangements for price determination, and measures of the performance of the transaction system. Evaluation is in the context of perplexing matters needing clarification. Research needs to be done on subsidizing activities of organized exchanges; mandatory reporting of market information; legislation on bargaining or group negotiation to protect the interests of producers, consumers, and the public; Government involvement in pricing; committee pricing; and Government intervention in agricultural inventory control that would operate continuously and would apply to both periods of shortfalls and periods of surpluses.

Ideally, one would like prices to be determined in a competitive manner and in the public interest. However, an evaluation does not make all of us feel this will come about automatically. An increase in decentralization, in private, closed transaction systems, and in contract commitments of various kinds to trade in advance of price determination will make it more difficult to know whether the pricing environment is competitive or not and will make it possible for imbalances of power to be exploitive. This will create difficulties in determining value directly and will also create difficulties in equity and creditablity.

In the future, the process of price determination will largely depend on our national policy toward its mechanisms, institutions, organizations, and procedures. The research that has been proposed needs to be done in such a way as to provide direct assistance to decisionmakers.

PRICE DETERMINATION PROCESSES: Issues and Evaluation

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PRICE DISCOVERY PROCESSES AND MECHANISMS FOR PRICE DETERMINATION[1]

This section discusses a framework (and its component parts) for describing and evaluating alternative pricing processes and mechanisms for price determination. The framework is basically static but can be considered dynamic in the sense of comparative statics or a temporally recursive system. In this section, the focus is on processes and mechanisms, rather than on price theory or economic forces.

The basic approach envisions an economically meaningful relationship between the kind of arrangements that exist between buyers and sellers at various levels of trade for a commodity and the performance of the transaction system. It is presumed that a transaction system includes the kinds of arrangements that exist between buyers and sellers, the institutions established for collecting and disseminating information and for providing opportunities for exchange, and the rules and regulations (public and private) that control or influence the behavior of the participants. The approach further envisions a causal relationship between policy variables, to be described later, the variability of arrangements, and the performance of the system.

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[1]*Seminar held December 5, 1973.*

Terms used in the title may bring different concepts to the minds of different individuals. The definitions of these terms as used in this section follow:

Price discovery refers to a *process* by which buyers and sellers arrive at a specific price. A buyer or seller may have no control, little control, or great control over the price arrived at, but in all cases the process will involve an attempt to discover the best price for the particular conditions, including those of place and time, under which the buyer and seller find themselves.

Price determination deals with the *theory* of pricing and the manner in which economic forces influence prices under various market structures and over various periods of time.

Mechanisms refers to institutions, structural arrangements, and tools used by participants in the process of price determination. They are part of the price discovery process.

Price theory and the theory of exchange do not help us explain or understand very well the formation of prices, nor do they help us estimate the impact on performance of alternative processes or mechanisms. Morgenstern points out that formation of prices is not explained by current general equilibrium theory, and he includes it among the great unresolved issues in contemporary economic theory (*8*).[2] Furthermore, it appears that general economists do not understand or concern themselves with the process of price formation. If they did, they might find better ways to deal with current price problems. Agricultural economists and university business management faculty members probably have a better understanding of the processes and mechanisms involved in price formation and recognize that the kind of arrangements and the rules and regulations for trading do in fact have some impact on the outcome. Raikes (*9*) concludes in a recent study of auctions that alternative bidding arrangements and initial conditions have an important impact on efficiency and the division of gains among participants.

Tomek and Robinson in their recent book (*14*) devote 88 pages to pricing institutions. Half of these are devoted to futures trading. Only 17, less than 20 percent, are devoted to mechanisms. In their conclusions on the mechanisms chapter, they state that "Unfortunately there is little empirical evidence on which to base firm conclusions about the relative performance of alternative price-discovery mechanisms" ((*14*) p. 231).

Industry leaders and some agricultural economists feel that the traditional institutional arrangements no longer provide effective means for value determination. To support their belief, they point to the decline in volume on terminal markets (for cattle, hogs, and fresh fruits and vegetables), the extreme variation in the prices of some commodities, the felt need for price control across much of our economy, and the trend in vertical integration. They argue that, unless something is done to maintain an open market, we will end up with a highly integrated, concentrated agricultural sector which will not perform in the best interests of society. Some will argue that organized exchanges must in some way be preserved if we are to maintain an agricultural sector that will perform satisfactorily.

Many of the claims and fears might be justified; others might not. However, a better understanding of economic relationships is necessary if we are to develop and prescribe appropriate policy.

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[2] *Italic numerals in parentheses indicate references cited at the end of the report.*

As a start, hypothesize that different transaction systems will have an impact on industry performance and that different public and private policies will have an impact on the viability and performance of the different types of arrangements. The prices — performance measures, types of arrangements for exchange, and policy variables — will be discussed first. Hypothetical relationships will be integrated into the discussion of each.

Performance Measures

Although general equilibrium theory doesn't help us describe or analyze the processes or mechanisms involved in price formation, it can provide a starting point for the selection of performance measures. In our free-market capitalistic system, price is expected to carry the information necessary to cause appropriate adjustments in resource use and to allocate scarce resources and commodities so as to maximize consumer satisfaction (utility). The basic performance measure could, then, be in terms of how well the pricing system does the job of allocation.

However, we are not always satisfied with the income distribution outcome of our system, and therefore, we may also want to look at the welfare considerations of alternative systems in terms of their impact on price levels and variability and on income distribution. Furthermore, quantification of welfare functions or objective may be impractical and overoptimistic. Therefore, we may want or need to look at other performance measures.

Also, price performs many functions, such as equating supply and demand in the short run, encouraging appropriate inventory decisions, guiding future production, encouraging adjustments in technology, and promoting the development of new products. Satisfactory performance in one area may be inconsistent with satisfactory performance in another. Since trade-offs are probably necessary and priorities might have to be established through political processes, it would be helpful to understand how different price discovery arrangements or mechanisms affect each of several different possible performance measures.

The following are tentative and subject to modification but provide a basis for discussion. Some can be quantified; others can not. Most will have to be described in both quantitative and qualitative terms. Five specific areas with appropriate subparts are listed:

1. Allocation efficiency considerations, including such matters as (a) short-run market clearance, (b) inventory adjustments, (c) production adjustments, and (d) marketing efficiency.
2. Welfare considerations, including (a) price level, (b) price stability, (c) price dispersion, and (d) sharing of gains or losses.
3. Competitive considerations, including (a) market access, (b) bargaining power, (c) structure, and (d) information flow.
4. Cost considerations, including (a) waiting time, (b) transport costs, and (c) systems costs.
5. Buyers' and sellers' satisfaction; i.e., is obvious dissatisfaction on the part of large numbers of participants, or the public, concerned with the way the system operates or with the results that flow forth?

Types of Arrangements

Many different types and kinds of arrangements between buyers and sellers exist in agriculture, and indeed, several can and do exist concurrently for each of the several commodities. Furthermore, from time to time the mix changes as other changes occur in industry structure, product use, product characteristics, etc. Shepherd suggested some time ago that pricing methods in agriculture progress from bargaining on each transaction in centralized markets, to decentralized markets, to, finally, a price committee system ((*14*) p. 216). Most commodity markets currently appear to be in the situation of progressing from centralized to decentralized, and some have elements of a committee system.

For the purpose of discussion, the following classification of arrangements between buyers and sellers is set forth:

1. Organized exchange mechanisms for current delivery, including terminal markets, auctions (both live and electronic), commodity exchanges, and telephonic exchanges (with means for both manual matching of trades and computerized matching of trades). The common characteristic is that an institution or organization exists to provide facilities, equipment, and means to facilitate trading among individuals or groups of individuals for a particular commodity or group of commodities. In analysis, a comparison can be made between private-treaty, auction, bid-offer, bid-acceptance, and offer-acceptance arrangements. Also, various means of support can be considered, such as voluntary user support, voluntary subsidization, and mandatory trading.
2. Organized exchange mechanisms for future delivery, such as the futures market and other contractual arrangements.
3. Decentralized trading, including individual negotiation, specific procurement systems operated by buyers, and producer marketing systems operated by farmer sellers.
4. Formula-pricing mechanisms, including those in private contractual arrangements (with price based on other market prices for the same commodity in the same form; on other market prices for the same commodity in a different form; on market prices of other commodities; or on other economic factors, such as cost of production or consumer purchasing power) and those in public programs, such as the Federal price support programs (with price tied to some parity price) or the marketing orders (with minimum prices established by formula).
5. Administered pricing, including both the private and public form.
6. Committee pricing, including pricing by private committees within firms or in the industry and public committee arrangements.
7. Group bargaining.

Policy Variables

Decisions of Government or industry trade organizations or both can or might influence or affect the viability of the various types of exchange arrangements and their performance. The purpose of this section is to identify and list those policy variables that have or might have some influence.

1. *Government.*—The Government can and does regulate contract terms, trading rules, and participation rules of organized exchanges. It could also

subsidize mechanisms of organized exchanges or require mandatory trading on organized exchanges. The Government can also collect and disseminate information. The important issues here are budget allocation; i.e., what activities are in the best interest of the public? Obtaining information that is appropriate for decision-making should have a decision-theory base of justification. The Government could also have a system for suggesting prices through either a formula or a committee structure. Regulation of competition through policies which affect the structure and conduct of the industry is important and probably has some impact on the appropriateness and performance of pricing arrangements. Educational programs on alternative arrangements for trading or doing business directed to cooperatives, trade organizations, or the public in general will also have some impact. Grades and standards are essential policy matters to be considered for the appropriate functioning of exchange mechanisms, and the Government has a role to play in this area.

2. *Trade organizations.*—Trade organizations can also affect the pricing process through collecting and disseminating information, influencing trading or exchange rules and regulations (guidelines), and subsidizing mechanisms of organized exchanges.

TRANSFER PRICING AS AN ISSUE IN AGRICULTURE AND AS A PROBLEM FOR COOPERATIVES[3,4]

Throughout agriculture, there has been an increase in the number and types of coordinated activities, from complete integration to various forms of contractual relationships. Commitments are made which partially or completely bind producers to a cooperative or corporation or bind producers to a cooperative which, in turn, is bound in some way to another cooperative or corporation. Freedom of choice is thus restricted in some way, and there is implicitly some function with a joint profit objective. It has become common to refer to the price used in such coordinated relationships to transfer commodities or goods and services as a *transfer price*. A fair degree of autonomy often exists in production and marketing decisions of cooperative management and the producer. There is a need, therefore, for an incentive system to encourage best performance.

The transfer price partially or completely distributes revenues; it has an impact on profit, income flow, and distribution, and thus it influences behavior. There are several joint ventures across the country to which the question of what the transfer price should be poses a real problem.

The rule employed to determine what transfer price should be a means of looking at and talking about the relationship between producers and cooperatives in general. The discussion sticks to marketing cooperatives, but the same generalizations might apply to any cooperative or joint-venture arrangement.

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[3] *Seminar held on January 9, 1974.*

[4] *The author is deeply indebted to Fahri Unsal, graduate research assistant, Cornell University, for his work. It provides the basis for this discussion. His work is available in processed form under the title "Transfer Pricing: A Review of Literature."*

The basic premise is that the rule governing what the transfer price shall be will have an impact on management decisions of the cooperative and on the behavior of farmer members. The objective is to establish a transfer price rule, possibly along with other transaction rules, which will provide the proper signals to both the farmers and the cooperative's management so that their individual decisions will result in adjustments that will yield a maximum level of joint profit.

The following categories of prices and transfer prices are important and are relevant to the present discussion:

1. The transfer price to use to make payments to producers.
2. The transfer price to use for internal transfers within the cooperative between divisions or, in the case of a multifunctional cooperative, between profit (or cost) centers.
3. The prices and transfer prices to use in planning — in the development of cash-flow or pro forma material to be used as a basis for decisions on the establishment or abandonment of an operation or of a cooperative.

A review of literature[5] by Fahri Unsal defines transfer pricing as the term is normally used and presents the conclusions of several authors as to the best transfer price to use in different situations. The objective in the base of a decentralized corporation is the same as the one alluded to with respect to cooperatives; that is, to maximize joint profit. Moreover, in cooperatives, as in decentralized corporations, the transfer price rule has the purpose of getting the management of partially autonomous management units to make the proper decisions for joint profit maximization.

The basic model uses the marginal approach to determine the quantity and price relationships which will, in fact, lead to maximum profit levels. In its raw form it is static. It can be made dynamic through simulation and through the introduction of stochastic elements into the formula. A graphic presentation for a single commodity is presented in figure 1. This basic model is used in developing some tentative hypotheses as to the consequence of alternative transfer price rules under different circumstances.

Assume a situation where the cooperative (1) buys a single commodity from a group of producers, (2) processes it, and (3) sells its product in a nonperfectly competitive market. Further assume that the external market for the commodity is perfectly competitive (that is, the cooperative can buy or the producers can sell in the external market without any effect on the external price) and that producer members will desire to decrease production at lower prices and increase production at higher prices.

Under these circumstances the net marginal revenue[6] (NMR) function of the cooperative in buying various quantities will be negatively sloped (fig. 1). The quantity the producers will be willing (will desire) to produce can be represented by the summation of their individual marginal cost curves (the positively sloped portions). This is represented by MC in figure 1.

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[5] *See footnote 2.*

[6] *The met marginal revenue is, by definition, the additional revenue obtained from producing the last unit of volume.*

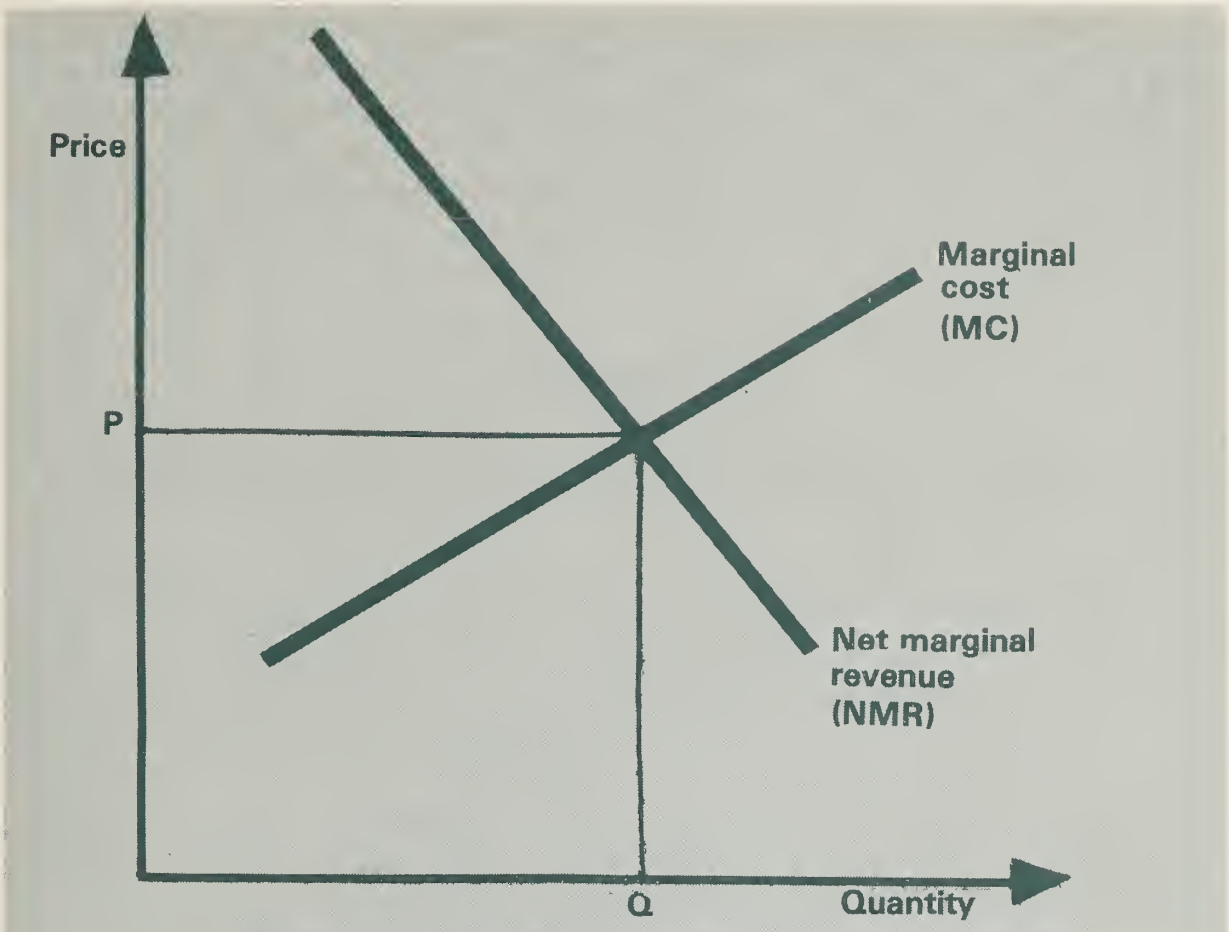

Fig. 1 - Situation 1: Optimal production level of a joint-venture arrangement with no outside market for the commodity

In our model, then, joint profit is maximized at price P and quantity Q. If the transfer price were at any other level, the two parties would not want to produce at Q. In a dynamic market, the optimal price and quantity are difficult to determine in advance. The slope and level of the NMR curve will shift because of changes in the market for the product, changes in the prices of the inputs, and changes in technology.

Situation 1

If there is a market price, it may differ significantly from the optimal price. If at any time the market price differs from the optimal price, the participants could increase joint revenue by buying or selling in the open market, provided, of course, the action does not result in a change in the market price.[7]

Tentative Hypothesis 1. A first tentative hypothesis is, then, that if a joint-venture relationship operates in a competitive environment for a commod-

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[7]*Note here that the optimal price is derived from the optimum quantity and is where the marginal cost equals marginal revenue in the joint revenue and cost functions for the producers and the cooperatives. The price determined this way is not the same as the average net revenue of the marketing or processing operation. It could be greater or less than the average net revenue (considering all costs included in the determination of the net revenue).*

ity and the cooperative can buy from the open market at the same price that the producer can sell at, the best rule is that the transfer price be set at the market price and that both the cooperative's management and the producers be permitted to operate in the open market. To prevent abuse, however, the producers would be required to supply the cooperative with the quantity that management wants. The performance test would be the profit level of the cooperative.

Situation 2

The cooperative's open market buying price is greater than producers' open-market selling price, which is greater than the optimal price ($P_b > P_s > P$) (fig. 2).

Under certain conditions, the open-market price at which the cooperative can buy from nonmembers (P_b) may be greater than the open-market price at which the producers can sell to other buyers (P_s). This could result from locational differences or local monopoly situations relative to other supplies. The optimal price could fall below the producers' selling price (P_s), between it and the cooperative's buying price (P_b), or above the cooperative's buying price, depending on the course of events which determine those prices and the management, production efficiency, and selling ability of the cooperative relative to others in the same business or in similar businesses.

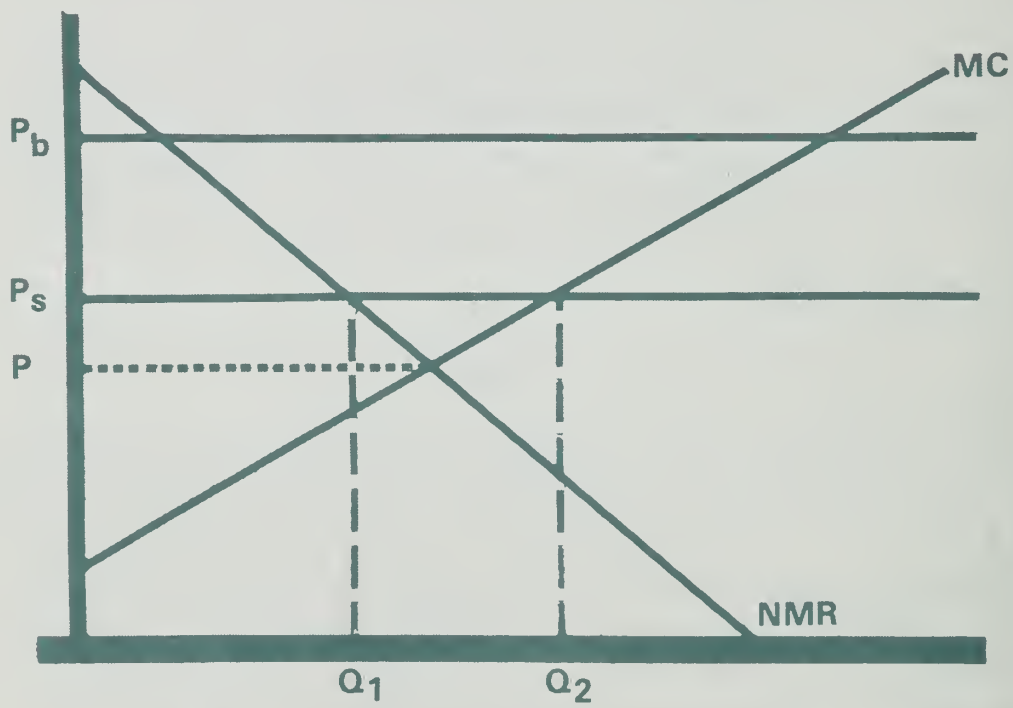

Fig. 2 - Situation 2: The cooperative's open-market buying price (P_b) is greater than the producers' open-market selling price (P_s), which is greater than the optimal price (P)

If the optimal price is less than the producers' selling price, the best transfer price is P_s, or the price at which the producers can sell to other buyers. The rules should specify that the cooperative get all it wants and that producers be permitted to sell the excess in the open market. The important point is that, in this situation, P_s as a transfer price would produce the response of both parties to maximize joint profit.

If the optimal price (P) were used, the producers would want to sell all of their output on the open market. This would cause producers to leave the joint-venture arrangement or would cause a great deal of dissatisfaction on their part if the rule required them to deliver all or even a portion of their output to the cooperative.

If the cooperative's buying price (P_b) were used as the transfer price, the producers would want to deliver more than the optimal quantity to the cooperative; this would reduce profit. The rule here could limit deliveries to the optimal amount. This would provide the proper signal to producer members but could be considered discriminatory under certain circumstances, and the member producers would have an incentive to want to produce and deliver larger quantities than optimal.

Tentative Hypothesis 2—If the optimal price tends to be below the price at which the producers can sell, the best transfer price is the price at which the producers can sell to outside buyers. Rules, however, would require the producers to deliver the optimal quantity to the cooperative while permitting them to sell the excess in the open market. Any different rules would cause the two units to make decisions contrary or counter to their common goal of profit maximization.

Situation 3

The optimal price is greater than the cooperative's buying price ($P > P_b > P_s$) (fig. 3).

In this situation, the best transfer price is the cooperative's buying price (P_b). The rule should specify that the cooperative should take all that its producers are willing to produce and buy even more on the open market. If P_s is used as the transfer price in this situation, the producers will produce less than the optimal quantity. The cooperative, if permitted to buy on the open market, would be paying more than what producers would have needed as an incentive to produce additional quantities. Therefore, joint profit would be less than its potential.

If the optimal price (P) is used as the transfer price, the producer has an incentive to expand beyond the optimum for joint profit maximization.

Tentative Hypothesis 3—If the optimal price tends to be above the price at which the cooperative can buy supplies from other producers, then the transfer price should be the price at which it can buy from other nonmember producers. Rules would require that the cooperative take all that the producers are willing to produce but that the cooperative be permitted to buy additional quantities on the open market.

Situation 4

The optimal price is between the cooperative's buying price and the producers' selling price ($P_b > P > P_s$) (fig. 4).

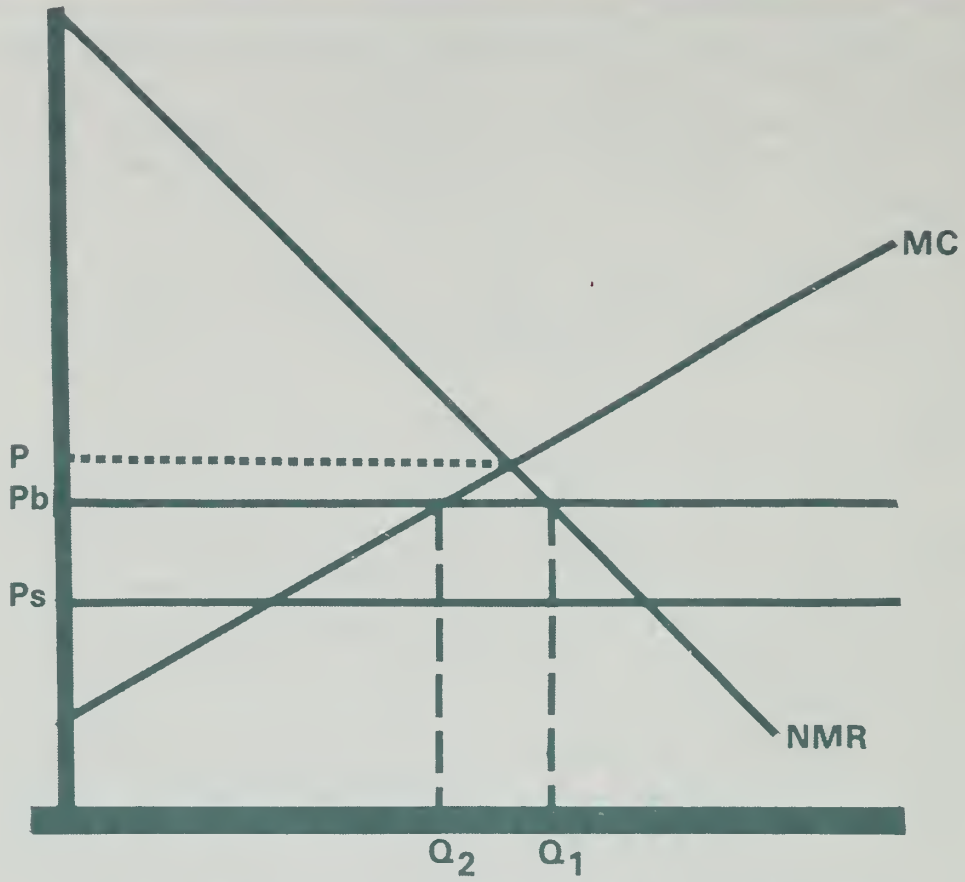

Fig. 3 - Situation 3: The optimal price (P) is greater than the cooperative's buying price (P_b) which is greater than the producers' open-market selling price (P_s)

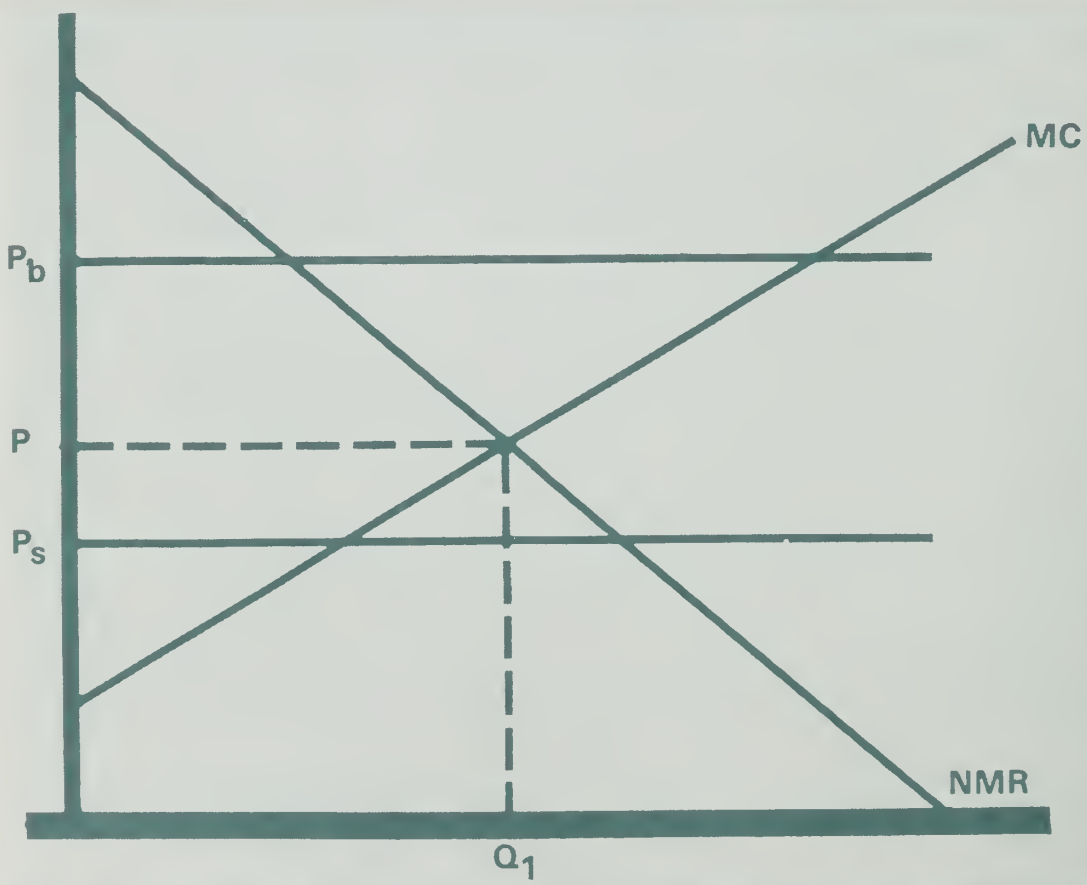

Fig. 4 - Situation 4: The optimal price (P) is between the cooperative's buying price (P_b) and the producers' selling price (P_s)

In this situation, the best transfer price is the optimal price; that is, the internal marginal cost-marginal revenue price. There would be no need for a rule on quantity, as both sides would have no better alternative. If P_s were used, the producers would tend to produce less than the optimal quantity, and if P_b were used, they would tend to produce more than the optimal quantity.

Tentative Hypothesis 4—If the optimal price tends to fall between the price at which the cooperative can buy on the open market and the producer can sell, then the transfer price should be the optimal price. No additional rules would be necessary relative to quantity.

However, if this is only the relationship that expectations lead one to believe is the norm or average tendency over a period of years (or months), but that if situation one or two occurs from year to year because of external factors or fortuitous events, then it will be necessary to establish a quantity rule and set the transfer price at the optimal price or at the buying price when it is below the optimal price and at the selling price when it is above the optimal price.

Rules other than those mentioned would tend to result in less than the best results, because they would give the wrong signals for investments, expansion or contraction, and establishment or abandonment of operations.

Implications of Patronage Refunds or Profit Distribution

No matter which transfer price rule is used, the distribution of the profits earned by the cooperative, if any, results in an effective price or average return higher than the transfer price. The implication of patronage refunds, then, is that producer members will always have an incentive, or receive a signal, to produce more than the optimal quantity. This probably explains why cooperatives (unless they are operated inefficiently and thus have no profit or excess to distribute), especially successful ones, tend to attract too many members, or their producers tend to expand faster than is good for the efficient operation of the cooperative, or both. Only if a major portion of the profit or excess is reinvested, retained, or returned later will this tendency be prevented from developing.

An Imperfectly Competitive Commodity Market

If the market for the commodity is imperfectly competitive, the situation becomes much more complex, even in the static framework. However, the same tentative hypotheses would likely hold, because one could incorporate the extent of the imperfection into the shape of the open-market price lines (P_b and P_s) and solve for the optimal price. Analyses similar to those previously made would be possible to develop similar implications.

Multiple Commodity Situation

If it were possible to develop separate marginal cost functions and net marginal revenue functions for the separate commodities of an operation that handled more than one commodity (for example, a vegetable-processing cooperative that handled several vegetables), the best transfer prices would be those already explained, but set separately for each vegetable. Of course, the

marginal cost of producing one vegetable may be the opportunity cost of not producing another. However, over a period of years these costs tend to be reflected in the prices of the resources used in production. Thus, it is probably not too unrealistic to assume independence and to develop the marginal cost in terms of resources used.

Dynamic Situation

Prices and market conditions vary from year to year because of many factors, including changes in consumer attitudes and purchasing power, new product developments, new technology, weather, and many economic considerations. The nature of the revenue and cost functions is uncertain. However, in theory, decisions will be made by producers and the cooperative's management that would move them toward the optimal quantity, provided they receive the correct signals. It is tentatively hypothesized that the rules that have been discussed would give them the correct signals in a dynamic environment. This hypothesis could only be tested through simulation or experimentation.

Reported Market Prices as a Transfer Price Base

The most commonly used transfer price is the market price, but not the "market prices" of the previous discussion. Those "market prices" were the prices at which the farmers could sell (P_S) and the prices at which the cooperative could buy (P_S) over the time period in question. These would not necessarily be the same as the market prices reported by the Federal-State Market News Service, by a private news service, or by a State or Federal statistical reporting agency. They are most likely different for several reasons, as follows:

1. The daily report of the Federal-State Market News Service usually represents a range of prices which may cover trades under differing circumstances and conditions.
2. The private news report may cover a small set of possible or actual trades that actually occurred, but under conditions that may or may not be similar to the conditions of the situation in question.
3. The USDA Statistical Reporting Service collects prices through a sampling technique that is probably more representative of actual prices, but its reports usually cover a rather wide geographical area. They are either simple or weighted averages for the market or area.
4. The reported prices mentioned in the preceding items may represent situations quite different from the one faced by the cooperative or the farmers in question because of location, commodity quality, level of trade, and other trade factors, such as date of payment, interest charges, and transportation or other services provided.

If the market price as quoted by a third party is used, the differences embedded in that quotation need to be recognized and accounted for through use of an adjusted price as the transfer price.

Another problem, of course, is that there might be no meaningful or reliable publicly reported market price. If this is the case, a substitute needs to be used.

Another major problem arises if the reported or quoted price is a noncompetitive price: the structure of the industry or the volume traded in the open market may be so small that the reported price is nonrepresentative of any competitive situation. If this is the case, use of such reported price may lead to some serious equity problems and adjustments by one or the other of the parties involved that would be grossly inconsistent with joint profit maximization.

Examples of Transfer Price Rules Used

As one looks at agriculture today, one observes a great number and variety of transaction arrangements and transfer price rules. One notes also a great variety of rules which the cooperatives use to distribute earnings above (or losses below) those distributed through the transfer price rules. Most of these, however, use some form of market price as the transfer price or, at least, as a point of reference.

A description of some actual arrangements should help identify the problem of value determination and the consequence of using alternative rules.

Market Value as Reported by the State Crop Reporting Service[8]

One large producers' cooperative has entered into a long-term (80 years) contract with a corporation, 12 percent of which is owned by the cooperative. All output of the cooperative's membership is delivered to the corporation. The producer contract is for 3 years and is automatically renewable for another 3 years, unless a termination notice is given by the producer 1 year in advance of the last year. The producers are guaranteed market value. Twenty percent of any profit of the corporation is distributed to the cooperative, and 80 percent is distributed to the other owners or is retained.

Market value in this example is assumed to be the average price paid, by variety and region, by all proprietary firms in the State; they buy about 50 percent of the crush. The State crop reporting service collects approximate information on price and quantity each week and publishes it. Then, at the end of the season, it gets a more precise estimate of quantity and price and determines a weighted average price. It is this latter market price that is used as the transfer price.

The commodity is delivered in September and October. The first payment to producers is made around December 31 and covers about 50 percent of the estimated value. The final payment is made around June 30 of the next year. Profit is determined for the fiscal year (July 1-June 30), and 20 percent of this is turned over to the cooperative about October 1.

The crucial variable in the value is the market price. It is the required basis for distributing returns from the sale of final product or the product of the corporation. The profit level and, thus, the allocation are subject to internal investment and expenditure decisions of the corporation's management. The effective transfer price will be the calculated market value less the amount retained plus the pro rata share of the profit allocation.

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[8] *No firm names are used so as to not obviously divulge individual firm information. However, the facts will be accurate to the best of the author's knowledge.*

The effective transfer price will differ from the calculated market value in several ways. First, growers who do not belong to the cooperative are paid cash on delivery, while 50 percent of the payment to the cooperative's members is delayed 60-90 days and 50 percent is delayed about 9 months. The profit allocation is delayed about 14 months, but since there is a time lag between delivery of the raw product and sale of the final product, the actual delay is much longer. Any reasonable present-value discount procedure would result in the effective transfer price falling below the market value, unless profits were very high or the amounts retained were quite small. Second, the cooperative's members have a guaranteed buyer for their grapes. The nonmember growers do not.

In essence, the transactions that the market value represents involve a completely different set of attributes than the transactions of the joint-venture arrangement. Whether the market value is comparable to the P, P_s or P_b of the previous discussion should be of interest to the corporation's management and to the producers, because it will have an impact on their decisions and on the future status of their relationship.

From cursory review of the situation, it appears that the effective transfer price is likely to be below P_s. It certainly is below P_s for the immediate year of delivery. If this is true, then the corporation's management has a lower raw product cost than competing corporations that are not related to such a cooperative. The amount of profit to be distributed will be a function of the corporations' competitive behavior, as well as the behavior of others in processing and in marketing.

The point is that, if the effective transfer price is below that of the best transfer price, both the corporation's management and the cooperative are receiving incorrect signals for decisions on investment, production, marketing, and distribution. Any procedure other than the one described should, however, be entered into with caution. This procedure does provide one basis for a reasonable allocation of returns from the total operation among growers of the different varieties of the raw product.

An Independently Developed Commercial Value.—Another joint venture involves a producer cooperative which owns the processing equipment and facilities for a large fruit and vegetable processing operation. It has entered into a joint venture with a corporation to operate the facilities and market the output. The producer contract is for specific volumes, is initially for 3 years, and is renewable annually. A producer is required to make a capital investment, the amount varying among commodities, in proportion to the quantity specified in his contract.

Growers are committed to deliver their contracted volume, and the joint venture is required to take the contracted volume. A grower's additional volume can be sold to the joint venture at a spot-market price or sold to other processors. Growers may, and many do, contract volume with other processors.

The transfer price used to determine the initial allocation of revenues of the joint venture to the cooperative is what the joint venture calls the "commercial market value." It is defined as the overall weighted average value for like quality used for similar or like uses. It is determined by obtaining from any and all possible sources the quantity and price of all noncooperative purchases, contract and spot, in the region, or in other regions if necessary, and it reflects appropriate adjustments, recognition of quality, and other transaction attributes.

Also taken into account are any volumes that the joint venture purchases on the spot market. The calculation is an attempt to determine the average (weighted) value for P_S; that is, the price at which the producers could have sold their output if they had sold on the open market under the same terms and in the same proportion as all other nonaffiliated producers in the region.

Payment is delayed here, as in most similar situations, because value can be calculated only after the information is available on what the "market" did. In this instance it is paid in three parts. About 50 percent is paid within 30 days of harvest (or delivery); 25 percent is paid within 90 days later. The final payment, up to 25 percent more, is paid on July 15 of the following year. This can be in cash or 20 percent can be in cash and 80 percent in certificates.

An allocation of returns over costs is made on about a 50-50 basis between the management corporation and the cooperative, depending on the decision of the joint board. The cooperative's share is prorated, according to dollar sales, to each member.

The determination of the "commercial market value" is crucial in that it establishes a level of expectation to producers and management that they will receive or pay at a level equal, on the average, to what other producers are receiving or competitor processors are paying.

The procedure for actually determining market value is negotiated each year between the corporation's management and board and the committees and board of the cooperative, prior to the determination of contract volume and the signing of contracts. In this way, unusual situations that might have occurred during the past year or from one year to the next can be taken into account.

Other Kinds of Transfer Price Rules

Many other transfer price rules have been suggested and used. Each has a separate set of implications. The most common are summarized in the following sections.

Average Net Revenue.—A rather common approach is to make the transfer price equal to the residual value of the cooperative's operation; that is, set the transfer price equal to the difference between the estimated gross revenue per unit from the sale of the product and the average total cost per unit of all the cooperative's functions involved. The transfer price value becomes a function of the nature of the final product market, the operating efficiency of the operation, the price of other inputs, the accounting procedures used to compute depreciation charges, etc.

This procedure has appeal to many because they believe that this is the way producers can get all of the returns that the market will yield. This is the major advantage. However, there are several disadvantages. First, all the risk of the market and of operations falls on the producer. Thus, the cooperative's management is not forced to think in terms of maximizing the profit of its operation and may not take into account in its decisions the product price

consequence or the marginal cost consequence of changing operating levels. The tendency would be for management to want to expand beyond optimum levels of activity, because it would not be required to face up to the restraints of the market or to direct its efforts in the direction of opportunities to maximize profit. The producers sometimes don't like this rule, because the transfer price can be influenced by the way depreciation is handled and by investment decisions of the cooperative's management. Under this rule joint profit could only be maximized by accident.

If this transfer price rule is used, most decisions as to the operation of the cooperative probably will have to be made directly or indirectly by the producers. It is probably the rule most appropriate for service operations for which the decision on volume or quantity is not crucial and the quantity and function can be specified in a meaningful way by the producer group. In such a case, the objective of the cooperative's management decisions would be to minimize costs of providing specified services for specified volumes.

Negotiated Transfer Price. In complex relationships and in situations where no acceptable outside competitive market exists, the most appropriate rule could be one establishing a procedure to negotiate the transfer price. However, if this is done effectively, the level would have to be near that determined in the previous discussion to be the best. The advantages would lie in an increased flow of communication and information between the producers and the cooperative's management. The disadvantages would lie in the costs and time required to collect and analyze the appropriate and necessary information.

Summary. In a joint-venture relationship such as that of a group of farmers with a cooperative, the implied management objective is to maximize joint profit. If this is the objective, then the transfer price rule should provide the correct signals so that the separate management decisions of the cooperative's management and of individual producers would in fact yield that result. The separate and jointly determined decisions to expand or contract the cooperative's volume, to develop or abandon the cooperative's operations, and to make investment, operating, and sales judgments should all be in the direction of maximizing joint profit. If the appropriate transfer price rule is used, then separate management decisions to maximize separate profit levels should also lead to maximum joint profits.

If the commodity in question can be sold or bought in a competitive market, the tentative hypotheses indicate that: (1) The optimal price (net marginal revenue equals marginal cost) should be used, unless it falls above the price at which the cooperative could buy additional supplies on the open market; (2) In this case, the open-market buying price should be used; (3) If the optimal price falls below the price at which the producers could sell on the open market, then the open-market selling price should be used.

Any other transfer price rule would result in signals which would most likely encourage adjustment decisions not appropriate for profit maximization.

Substitute rules that use market prices as reported by the USDA or private sources will work as long as they approximate the foregoing relationships. A determination of the appropriate rule should be evaluated according to the foregoing concept.

EVALUATING PRICE DETERMINATION PROCESSES IN AGRICULTURE[9]

The first section of this report, on price discovery processes and mechanisms for price determination, discussed in a rather pragmatic way the types of pricing arrangements that do or could exist, possible measures of performance, and relevant policy variables.

This section of the report will review some perplexing items, discuss the situation with major commodities, evaluate six alternative price determination processes, and then suggest some research questions that evolve.

Why the concern? For one reason, it's a challenge. Morgenstern lists as a fact that the formation of price is not explained in our current theory and argues that we know little if anything about the process (*8*). The author has watched with interest and even participated some in the struggle of the egg industry to develop a better system or process for the determination of egg prices. He was involved in the research on alternative egg pricing systems that George Rogers coordinated in the late 1960's.

But probably more important, some relationship exists between the type of arrangements that exist for price discovery (i.e., the nature of the total transaction system, the institutional arrangements, and mechanisms for price determination) and the market performance of the industry. Furthermore, some unrecognized and unresolved public policy issues are suspected. The externalities of alternative pricing arrangements are not readily apparent and are difficult to measure, but the author believes them to be important. Unfortunately or fortunately, only a few people seem to agree. But they are important people. Among them are Breimyer, Rogers, Sosnick, and others (*2, 10, 13*).

Several items appear perplexing:

1. In most commodity markets, a trend toward decentralization and more direct negotiation exists between buyer and seller on price and other terms of trade.
2. There is a decline in cash or spot trading on organized exchanges. At the same time, substantial increases in trading volume in futures contracts exist. The lamb industry provides one exception.
3. There is more forward contracting through private-treaty contracts or through trading in futures contracts. The prices in private-treaty contracts, if determined in advance, are determined in a very imperfect market situation. If prices are not determined at the time of the signing of the contract, the responsibility of value determination is placed on trading of uncommitted supplies. Competition in trading of these supplies is imperfect.
4. There is an increased use of electromagnetic means of communication to bring buyers and sellers together. However, this new technology has not been fully or adequately exploited.

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[9]*Seminar held on May 15, 1974. This discussion is based on, and is similar to, a paper presented at the annual meeting of the Southern Association of Agricultural Economists, in Memphis, on February 4, 1974. Prof. Richard Courtney of the University of California, Berkeley, raised some of the ideas discussed herein. He and the author worked together on a discussion paper within the subject matter area, which was presented at the annual meeting of the American Agricultural Economics Association in August 1973.*

5. Computers can handle large numbers of transactions and could provide the means of establishing more complex means of centralized organized exchange arrangements. Only a few attempts have been successful. Currently, however, there appears to be some renewed activity in this area.

6. The number of joint ventures has increased. In most of them, value determination depends on the existence of a market price. Some of these joint ventures cover most of the volume produced and, therefore, the market price is not a very reliable basis for value determination.

7. Last, Government intervention in price determination within a period of a few months went from price support to price suppression and then to a free market. The experience has highlighted the problems of ceilings as well as those of floors. We may hope that the experience was beneficial. However, attempts to intervene indicate that society isn't entirely happy with the outcome of the price determination system as it now operates.

Situation by Commodities

The situation is very mixed among commodities. Decentralization has been most dramatic in livestock. Volume at terminal markets has decreased substantially. Beef prices are now negotiated at the feedlot. Hog packers have buying stations located throughout pork-producing areas. Some sales are contracted in advance through futures-contract hedges.

An increased number of fresh fruit and vegetable growers negotiate a trade directly with chainstore buyers, and they bypass the central market. Growers of fruits and vegetables for processing have greater volume contracted prior to planting, either through private-treaty contracts or through contracts established by bargaining associations. Joint ventures are on the increase. These have a great variety of ways to determine transfer price. Some large marketing cooperatives are now in a better position to exert price leadership.

Broiler prices are individually negotiated between large integrated producers and chainstore or institutional buyers. There is some tendency toward determination of prices by group action.

Egg prices were long based on small-volume, central market trading, but since March 1970 there has been no exchange trading in New York or Chicago. Subsequent to March 1970, trading volume in fresh-egg futures contracts increased, absorbing some of the functions of a cash market.

There has never been an organized centralized exchange for milk, although a thin central exchange for butter and cheese has existed for some time. Most milk is priced administratively. Greater volume is now under the control of large cooperatives and is priced according to a formula that relates the price to the Federal milk marketing order price, which has been based in part on free market prices for raw milk or butter and milk powder. The free market supply of these products is very small, and thus there is some question about the validity of the established value.

Grain prices are determined in a complex mixture of organized exchange trading in spot and futures contracts. Grain cooperatives do not seem to be in a position to take much leadership in price determination. The grain futures market operates erratically when supplies are very tight. Unless they are very heavily regulated and monitored, futures contracts may be used to generate

shortrun windfall gains or losses. This can send incorrect signals to the cash market and to production and marketing decision-makers.

Performance Considerations

Here are a few brief comments and a list of some relevant measures of performances. Most of you are familiar with the literature on market performance measures. The best recent piece is by Marion and Handy (7). Much of that discussion is relevant here, except this is specifically about the relationship between the nature of the transaction system (the institutions, organizations, and mechanisms involved in price determination) and market performance.

Most pricing efficiency studies start out with the perfectly competitive model as a norm and measure the relationship among prices in time, form, or space. Deviations in excess of transfer costs are taken as indicators of imperfections. Further investigation is then conducted to determine the basic problem. Solutions may involve the establishment of cooperatives, a telephonic auction, or some other institution to facilitate arbitrage. This is a good short cut. However, such studies do not identify industrywide interseason adjustment problems or income distribution problems that are important in dynamic industry adjustment processes.

In an exchange economy such as ours, we expect price to perform many regulatory functions in the allocation of resources and products. The prices that evolve affect the distribution of income among participants at every level, and this in turn affects allocation. The price discovery processes that exist influence the ability of traders and potential traders to get together, affect the information flow, and may have an impact on the future structure and organization of the industry. Alternative arrangements involve different systems costs, waiting time, and transport costs. Some arrangements provide buyers or sellers or both with a feeling that they got the best deal possible; others do not.

The author would suggest that an evaluation of alternative arrangements should include consideration of their effect and impact on both private and public costs and benefits. The following areas would provide a general framework from which to start:

1. *Allocation efficiency*.—The effect on shortrun market clearance and inventory adjustments, the impact on future production adjustments, and the impact on the channels of trade and on the economic efficiency of the physical marketing activities.

2. *Welfare*.—The effect on average price level at different levels of trade, price stability, and price dispersion and the effect on the manner in which gains and losses are shared.

3. *Competition*.—The impact on the degree and ease of market access; the impact on the speed, accuracy, and distribution of information; and the impact on future structure and organization of the industry.

4. *Costs*.—The effect on waiting time, transport costs, and system costs.

5. *Satisfaction*.—The effect on buyer and seller satisfaction (their feeling that they got the best deal possible) and on public satisfaction. This is obviously too much to handle in one quantitative model. So any complete evaluation will be partially subjective.

The most important issue from the viewpoint of USDA and the universities is the identification and measurement of externalities; i.e., the public costs and benefits of alternative transaction systems. The operation of the market and the profit incentive should cause systems, institutions, and arrangements to evolve which will be optimal in terms of private costs and private benefits. However, such arrangements might not be optimal in view of externalities; i.e., costs or benefits to the industry or the public at large.

Alternative Price Determination Processes

We could evaluate many alternative arrangements. Six are discussed: (1) voluntary electronic or computerized organized exchange arrangements, (2) mandatory or subsidized organized exchanges, (3) decentralized trading and individual negotiation, (4) group negotiation and bargaining, (5) formula pricing, and (6) committee pricing.

Voluntary Electronic or Computerized Organized Exchange Arrangements.—Many suggestions and several attempts have been made to reverse the trend to decentralization of trading and increase the use of centralized exchange mechanisms. Teleauction systems are now in operation for slaughter lambs in Virginia and for feeder pigs in the Midwest. New ones are being put together for lambs in Idaho, Montana, and the Midwest. They seem to be working very well. The volume of feeder cattle going through auctions at terminal markets has increased, but so far none are sold through teleauction systems. However, many are sold directly over the telephone. Johnson has proposed that a teleauction system for fed cattle (*6*) would provide the best arrangement for pricing efficiency.

Schrader has designed an electronic computerized egg exchange. Buyers and sellers could enter bids or offers through touch-tone telephones. The computer would match like bids and offers and complete the transaction. Delivery would be direct from the seller's to the buyer's location (*12*). Holder has designed one of these systems for a forward contract for slaughter hogs (*5*).

The egg industry has a nationwide telephone exchange in operation that uses a wide-area telecommunications service (WATS). Matching of bids and offers is done manually. An individual in Illinois tried to start a private electronic exchange for slaughter hogs.

The principal advantages of electronic systems are that (1) management time and transportation costs of searching for buyers and sellers are reduced; (2) the need of moving the product to a central market point is eliminated, and (3) the number of potential buyers and sellers who can be contacted is increased.

Principal disadvantages are that (1) the product has to be gradable or definable so that visual inspection is not deemed necessary; (2) a critical volume is necessary to support a telephonic manual matching system, and a much larger critical volume is necessary to support a telephonic computerized matching system; (3) individuals will bypass the system to avoid user charges; (4) rigorously enforced rules on grades and standards and on financial accountability are a necessity; and (5) direct communication and negotiation on various terms of trade (such as those on quality, delivery schedules, etc.) which enable advance planning are restricted.

Mandatory or Subsidized Organized Exchanges.—The voluntary establishment of organized exchange arrangements will depend on the relative costs of sales or

procurement through direct contacts as compared to the unit costs of operating the exchange mechanism. For most but not all commodities, it is more economical for buyers and sellers to deal direct. A national producer cooperative subsidized the development cost of the egg exchange. The cooperative started it as a profit-making venture. After 3 years of operation, it is still a nonprofit operation. The teleauctions were subsidized by Federal and State agencies and existing cooperatives. Volume is relatively low, and the users' fee barely covers the low cost of manually matching the bids and offers.

A mandatory requirement that all or part of the marketed volume be traded across an organized exchange is also a possibility. Canada's mandatory system for hogs apparently works quite well.

If industry is to make sure that latent competitive forces have an avenue of expression when necessary or appropriate, it will most likely be necessary to subsidize in some way the operation of open-market exchange mechanisms. The author would favor subsidization over a mandatory requirement in this country.

Some have proposed mandatory exchange trading for livestock. Packers argue that it would cost too much and that, since visual inspection is necessary, their procurement costs would not be reduced. They further argue that the numbers of trades and traders are too large for mandatory exchange trading to be manageable, even if the mandatory provision covered only a portion of the volume.

The seemingly strongest argument against mandatory exchange trading is that it reduces buyer-seller contact and restricts communication to price and quantity data for prior-prescribed qualities, delivery schedules, and other terms of trade. Flexibility to adjust to changing conditions is thus somewhat reduced. The basic question relates to whether this cost in reduced flexibility is more than offset by the gain in pricing efficiency.

Decentralized Trading and Individual Negotiation.—The primary concern about a system of decentralized, primarily closed trading is that individual producers, processors, and distributors may have very little information on the total market situation and thus have difficulty determining the appropriate shortrun price. Moreover, if the negotiating power is not balanced, or one side has more information than the other, then there is a potential for abuse.

The system does have some advantages. Direct contact provides for maximum communication on various terms of trade, such as those on delivery schedules and quality. It provides a potential base for market orientation of production and coordination of production quantity and quality. Also, it forces the price decision to be made in terms of the real set of alternatives open to the individual involved.

The principal need under such a system is for information on what others are doing with respect to price and production decisions. If the current market news and statistical reporting system has difficulty getting proper, high-quality information, the industry might need to consider mandatory reporting requirements. It may also be necessary to review and possibly revise substantially the current public information system.

Under a decentralized system, some means may be necessary to make sure that the balance of power does not swing too far away from the farmer. The solution may be to make sure that farmers can group together, as appropriate, to negotiate.

Group Negotiation and Bargaining.—There are a large number of voluntary bargaining associations for milk and for fruits and vegetables. In 1969-70, there were about 170 such associations for milk and 40 for fruits and vegetables. They are decreasing in number, but the associations remaining are getting bigger ((*4*) p. 12-13).

There are cooperative laws that authorize bargaining units. However, to get more effective bargaining in the future, enabling legislation is needed which would more clearly describe a bargaining unit, prescribe a procedure for accreditation, require bargaining in good faith, and specify unfair practices. The Michigan Agricultural Marketing and Bargaining Act of 1972 establishes such a base for Michigan fruit and vegetable producers. One senses increased interest in this arrangement.

In milk marketing, bargaining units have been rather effective under existing legislation. The basic issue is whether or not rules are necessary to ensure that producers are treated equitably and that the cooperative performs in their best interest. Recent political actions of large dairy cooperatives have focused attention on them and rekindled concern over the protection of the public interest. The issue is how to maintain a proper balance of power that will be in the public interest in the long run.

Formula Pricing.—Most formula-pricing arrangements for private-treaty transactions use market prices (sometimes terminal market prices) as a reference point. This may be valid from the point of view of price efficiency if the actions of the firm or firms using the formula are independent of the actions of those whose trading determines the market price. If they are not, then the price level and the distribution of gains among participants may become seriously distorted.

Formula pricing is a convenience. If buyers and sellers can agree in advance on the formula, subsequent transactions are routine and the cost of price discovery based on that set of terms is practically zero. However, the price discovery function is delegated to others.

If traders in an industry use formula pricing, they need some reliable reference point that will adequately and accurately reflect the value of the commodity. If many producers get committed through some form of formula pricing, the open-market prices will not be reliable or will be difficult to obtain. Incorrect formulas result in performance inconsistent with the public interest and in misallocation of resources. It is this situation that raises a relevant issue of public policy. Should the Government become more directly involved in generating reference-point prices or indexes that could serve as elements in a formula? Should the public, for example, legitimize a committee which could meet periodically and publish value estimates that the industry could use as a base for determining day-to-day transaction values?

Committee Pricing.—Currently, there is no general enabling legislation that would authorize committees to assist in the price discovery process. Any industry committee which might meet to talk about price or to publish a suggested price would most likely find itself charged with violation of our antitrust law.

One of the recommendations that came out of the $300,000 research project on egg pricing that was completed in 1969 was that the egg industry should establish a committee of nonindustry persons to generate a suggested value for eggs. Legislation would be necessary to enable this to be done. The committee's

price could be used by traders as a reference point for formulas for individual transactions or for general information (*1, 12*).

A group of producers decided to bypass enabling legislation; they formed Egg Clearinghouse, Inc., in 1971 for spot trading, an exchange mechanism established a committee (the Egg Market Evaluation Committee) to translate trading into a set of value quotations. The committee is functioning with three members. It publishes its translation of market values twice a week after a review of trading and market conditions via a conference telephone call. If a quotation arrived at by a committee is objectively determined, it can facilitate an efficient determination of price. If the committee is run by industry, there may be some question of legality and a problem of creditability.

The committee system is used in bargaining or group negotiation. One large fruit- and vegetable-processing cooperative joint venture uses a complex committee structure in reaching agreement on the procedure by which the transfer price is established for each of the more than 20 fruits and vegetables contracted for each year. This joint venture processes almost 100 percent of some of the vegetables produced in its region. The committee system, although costly in time, provides for a price determination process that involves consideration of current information from many sources. Also, it helps to inform all concerned about how the process works. The process is more subjective and less objective than other processes. This is both a strength and a weakness.

One cannot predict in advance how well an industry committee might perform. In any enabling legislation, attention would have to be given to the makeup of the committee and the procedures for collecting and evaluating information.

The advantage of a committee process is its flexibility and adaptability. Its drawback is that it would be a personal, subjective process, potentially subject to manipulation or influence.

Government Intervention.—Government intervention in food pricing is probably inevitable. It has been around for centuries. The form it takes is crucial. Price ceilings low enough to be effective cause shortages and discourage production. Although we could end up with a level of output which would yield relatively good returns for the producers remaining in business, consumers would be dissatisfied with the quantity of food offered for sale. Rationing the available supply or Government involvement in distribution would become a necessity.

Price supports or minimum prices, with appropriate storage or inventory policies, reduce uncertainty. Effective minimums then tend to encourage production and generate surpluses. Public policy in this area must be consistent with the public interest, and implementers of the policy must be prepared to cope with the consequence of their final decisions. If a system of either floors or ceilings is to be effective, it must be used long enough to permit initial overreactions to work themselves out and consumers and producers to learn and adjust to the new set of rules.

The almost inevitable necessity of inventory control with price floors and of distribution control with price ceilings must be recognized. Maybe industry needs to consider either international futures markets with longer time horizons that go beyond the current season or the next season, or private contractual arrangements for future deliveries, with a market for the contracts.

Summary and Recommendations

Ideally, one would like prices to be determined in a competitive manner and in the public interest. However, an evaluation does not make everyone feel that this will come about automatically.

An increase in decentralization, in private, closed transaction systems, and in contract commitments of various kinds to trade in advance of price determination will make it more difficult to know whether the pricing environment is competitive or not, and will make it possible for imbalances of power to be exploitive. This will create difficulties in determining value directly and will also create difficulties in equity and creditability.

Research needs to be done on:

1. The feasibility of a subsidy through industry assessment or Federal support to establish or maintain viable organized exchange activities.
2. The feasibility of mandatory reporting of individual transaction prices, contract prices, and inventory positions. In connection with this, a review of the information now collected and disseminated is needed.
3. Specific legislation to insure that in bargaining or group negotiation there is equitable treatment of producers and appropriate treatment of consumer and public interests.
4. The feasibility of more direct involvement of the power of Government in helping to determine and suggest value that could be used as an element in formula price determination. A public committee structure offers a possible means.
5. The feasibility and efficiency of committee systems for price determination within large cooperatives, especially for determination of transfer price mechanisms used in joint ventures.
6. The feasibility of a more comprehensive form of government inventory control that would operate on a continuing basis and would apply to both periods of shortfalls and periods of surpluses; this could include new exchange mechanisms to commit resources and markets further into the future.

Finally, the author suggests that the process of price determination in the future will largely depend on our national policy toward its mechanisms, institutions, organizations, and procedures. The research that has been proposed needs to be done in such a way as to provide direct assistance to policy decision makers.

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FARMER COOPERATIVE SERVICE
U.S. DEPARTMENT OF AGRICULTURE

Farmer Cooperative Service provides research, management, and educational assistance to cooperatives to strengthen the economic position of farmers and other rural residents. It works directly with cooperative leaders and Federal and State agencies to improve organization, leadership, and operation of cooperatives and to give guidance to further development.

The Service (1) helps farmers and other rural residents obtain supplies and services at lower cost and to get better prices for products they sell; (2) advises rural residents on developing existing resources through cooperative action to enhance rural living; (3) helps cooperatives improve services and operating efficiency; (4) informs members, directors, employees, and the public on how cooperatives work and benefit their members and their communities; and (5) encourages international cooperative programs.

The Service publishes research and educational materials and issues News for Farmer Cooperatives. *All programs and activities are conducted on a nondiscriminatory basis, without regard to race, creed, color, sex, or national origin.*